

City Manager Approval _____ **Date** _____

1.0 PURPOSE

1.1 BACKGROUND

The Hazardous Materials Communication Program establishes methods for providing information regarding hazardous substances and controlled substances in the workplace as required by California Code of Regulations, Title 8, Section 5194 and CCR Title 22 Section 66261.4. This document has been designed to establish guidelines concerning the communication of hazards to City employees, contractors and other employees working on City property who may be exposed to hazardous materials used by the City.

1.2 SCOPE

This document applies to all personnel, facilities, and operations under the supervision and direction of the City. This Hazardous Materials Communication Program shall apply to all City departments and offices directly responsible to the City Manager. It is also requested that elective offices and other independent offices and departments comply with the Hazardous Materials Communication Program in the interest of administrative uniformity.

City employees working with hazardous waste must be trained in accordance with the Resource Conservation and Recovery Act (RCRA). The RCRA guidelines are not included as a part of the OSHA requirements for Hazardous Materials Communication, therefore, this document does not address the RCRA requirements.

1.3 POLICY

It is the policy of the City of Long Beach to ensure employees know the health hazards of the materials to which they may be exposed. Employees who may be exposed to potentially hazardous materials must receive training concerning precautions to take to prevent exposure and what to do if an accidental exposure occurs. Only employees trained in this Hazardous Materials Communication Program will be authorized to work with hazardous materials.

This Program discusses requirements for the use of hazardous substance labels and other hazard warning methods, Material Safety Data Sheets (MSDSs), hazardous materials evaluations, annual inventories, and employee information and training on hazardous substances.

2.0 DEFINITIONS

- 2.1** Chemical Name: The scientific designation of a chemical in accordance with the nomenclature system developed by the International Union of Pure and Applied Chemistry (IUPAC) or the Chemical Abstracts Service (CAS) rules of nomenclature, or a name which will clearly identify the substance for the purpose of conducting a hazard evaluation.

- 2.2 Combustible Liquid: Any liquid having a flashpoint at or above 100° F, but below 200° F, except any mixture having components with flashpoints 200° F, or higher, the total volume of which make up 99 percent or more of the total volume of the mixture (e.g., diesel fuel).
- 2.3 Container: Any bag, barrel, box, can, cylinder, drum, reaction vessel, storage tank, tank truck, or the like that contains a hazardous substance. For purposes of this section, pipes or piping systems are not considered to be containers.
- 2.4 Controlled Substance: A drug, substance, or intermediate precursor that is listed in any schedule of the Health and Safety Code Sections 11054 – 11058. Examples of controlled substances listed are opiates, cannabis, psilocybin, amphetamines, and cocaine.
- 2.5 Exposure or Exposed: Any situation arising from work operation where an employee may ingest, inhale, absorb through the skin or eyes, or otherwise come into contact with a hazardous substance.
- 2.6 Flammable: A substance that falls into one of the following categories:
- a. An aerosol that, when tested by the method described in 16 CFR 1500.45, yields a flame projection exceeding 18 inches at full valve opening, or a flashback (A flame extending back to the valve) at any degree of valve opening.
 - b. A gas that, at ambient temperature and pressure, forms a flammable mixture with air at a concentration of thirteen (13) percent of volume or less or a gas that, at ambient temperature and pressure, forms a range of flammable mixtures with air wider than twelve (12) percent by volume, regardless of the lower limit (e.g., hydrogen, acetylene).
 - c. Any liquid having a flashpoint below 100° F, except any mixture having components with flashpoints of 100° or higher, the total of which make up 99 percent or more of the total volume of the mixture.
 - d. A solid, other than a blasting agent or explosive as defined in Title 8 section 5237(a), that is liable to cause fire through friction, absorption of moisture, spontaneous chemical change, or retained heat from manufacturing or processing, or which can be ignited readily and when ignited burns so vigorously and persistently as to create a serious hazard.
- 2.7 Hazard Warning: Any words, pictures, or symbols, or combination thereof appearing on a label or other appropriate form of warning which convey the health hazards and physical hazards of the substance(s) in the container(s).
- 2.8 Hazardous Substance: Any substance which is a physical hazard or health hazard or is included in the List of Hazardous Substances prepared by Cal/OSHA pursuant to Labor Code section 6382.

- 2.9 Health Hazard: A substance for which there is statistically significant evidence based on at least one study conducted in accordance with established scientific principles that acute or chronic health effects may occur in exposed employees. The term "health hazard" includes substances which are carcinogens, toxic or highly toxic agents, reproductive toxins, irritants, corrosives, sensitizers, hepatotoxins, nephrotoxins, neurotoxins, agents which act on the hematopoietic system, and agents which damage the lungs, skin, eyes, or mucous membranes. This Program applies to all employees, including contract employees under the direct supervision of City employees, who may contact or be exposed to hazardous substances at the workplace during normal duties or under emergency conditions, and to those who are involved in the purchase, use or storage of hazardous substances.
- 2.10 Oxidizer: A substance that initiates or promotes combustion in other materials, thereby causing a fire either of itself or through the release of oxygen or other gases (e.g., hypochlorites, peroxides, chlorates, permanganates, nitrates)
- 2.11 Peace Officer: Any person who comes within the provisions of Penal Code 830.
- 2.12 Physical Hazard: A substance for which there is scientifically valid evidence that it is a combustible liquid, compressed gas, explosive, flammable, an organic peroxide, an oxidizer, pyrophoric, unstable (reactive) or water-reactive.
- 2.13 Pyrophoric: A substance that will ignite spontaneously in air at a temperature of 130° F or below (e.g., diborane, sodium, magnesium).
- 2.14 Unstable (reactive): A substance which in the pure state, or as produced or transported, will vigorously polymerize, decompose, condense, or will become self-reactive under conditions of shock, pressure, or temperature.
- 2.15 Water-reactive: A substance that reacts with water to release a gas that is either flammable or presents a health hazard.

3.0 RESPONSIBLE PERSONS

- 3.1 CITY SAFETY OFFICER and DEPARTMENT SAFETY OFFICER (ENERGY and PRM)
- 3.3.1 The City Safety Officer and Department Safety Officer shall:
- A. Monitor the Hazardous Materials Communication Program.
 - B. Assist Departments in complying with the program requirements including labeling, MSDS, training, and recordkeeping.
 - C. Remain available to employees and management concerning issues related to use of the hazardous materials.
 - D. Annually inspect work areas to ensure accurate maintenance of MSDS, labeling, and other requirements of the Hazard Communication Program.

- E. Evaluate the MSDS information for all hazardous substances and conduct an ongoing evaluation of hazardous substances being used to recommend safer alternatives, if available.

3.2 MANAGERS, SUPERINTENDENTS, AND SUPERVISORS

3.2.1 Managers, Superintendents, and Supervisors shall:

- A. Ensure all requirements of the Hazardous Materials Communication Program have been implemented.
- B. Develop and maintain, in a location accessible to employees, an accurate inventory of hazardous materials present in all work areas.
- C. Retain the original MSDS for your binder. Forward a copy of the new or updated MSDS to the City Safety Officer and Department Safety Officer (Energy and PRM) as it is received.
- D. Ensure proper container labeling by employees under their supervision.
- E. Ensure all affected employees are informed of each chemical's hazards and appropriate safe work practices before each chemical is used in the workplace. Ensure that new hires or transfers to a new work location are informed of hazards present, and required safe work practices, prior to beginning work.
- F. Ensure all affected employees are properly trained in the Hazardous Materials Communication Program.
- G. Ensure that the City Safety Officer and Department Safety Officer (Energy and PRM) are notified regarding the use of new hazardous substances or new uses for existing substances present at, or delivered to, areas within their jurisdiction.

3.3 EMPLOYEES

3.3.1 Employees shall:

- A. Read and comply with all hazardous materials communication procedures while performing assigned duties.
- B. Immediately route any MSDS received directly from the manufacturer to his/her supervisor.
- C. Review the MSDS of hazardous materials prior to working with them.
- D. Follow the directions listed on an MSDS for any hazardous material.
- E. Not bring any chemicals in from home unless authorization has been granted by his/her immediate supervisor.

4.0 LABELING (8 CCR 5194 (f))

It is the responsibility of the supervisor to ensure that employees properly label all chemical containers.

4.1 PRIMARY CONTAINERS

As a chemical product is received from the manufacturer, all labels must be in place on the container. Labels should never be defaced. Damaged or missing labels should be replaced. New labels do not have to be applied if the original label already includes:

- Identity of the hazardous chemical;
- Personal Protective Equipment Required; and
- Target organs or target system (e.g., lungs, nervous system).

4.2 SECONDARY CONTAINERS

This section applies whenever a chemical is transferred from the original container and put in a separate container for use. Containers of hazardous chemicals in the workplace must be labeled, tagged, or marked with the following information in English:

- Identity of the hazardous chemical;
- Personal Protective Equipment Required; and
- Target organs or target system (e.g., lungs, nervous system).
- Expiration date, if one is available from primary container.

On individual stationary containers, departments can use signs, placards (NFPA diamond), and other options in lieu of labels as long as the required information listed above is included.

If the department has employees who speak other languages, the label may add the information in the other language, as long as the information is presented in English as well.

The City will use the Hazardous Materials Information Guide (HMIG) for chemical labeling as presented in Attachment A.

4.3 PIPING

Piping systems through which potentially hazardous materials flow will be identified as to the contents at points where confusion may exist. Piping systems shall be labeled in accordance with Title 8 CCR, Section 3321, "Identification of Piping."

Other above-ground pipes that do not contain hazardous substances but may have associated hazards if disturbed or cut (e.g., steam lines, oxygen lines) shall be addressed as follows:

Before employees enter the area and initiate work, the supervisor will inform them of:

- The location of the pipe or piping system or other known safety hazard;
- The substance in the pipe;
- Potential safety hazards; and
- Safety precautions.

4.4 EXCEPTIONS

The labeling section does not apply to:

- Any hazardous waste as such term is defined by the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act of 1976; and

- Consumer products packaged for distribution to, and use by, the general public, provided that employees exposure to the product is not significantly greater than the consumer exposure occurring during the principal consumer use of the product. In other words, the consumer product must be in the same form, amount, concentration, and manner as it would be used by the general public.

5.0 MATERIAL SAFETY DATA SHEETS (8 CCR 5194(g))

5.1 AVAILABILITY

The MSDSs for hazardous materials used in the work area must be available to all employees during each work shift. Departments should prepare a binder with all current MSDSs of chemical products used by their bureaus. Purchasing shall ensure that MSDSs arrive with chemical products as a condition of purchase. Any department ordering potentially hazardous materials through channels other than Purchasing shall assure a current MSDS is supplied by the vendor. If MSDSs do not arrive with the chemical product, the supervisor/manager/superintendent shall call or write the manufacturer and request a MSDS. If a supervisor/manager/superintendent is unable to obtain the MSDS from the vendor within 25 calendar days of the request, they will notify the City Safety Officer.

All employees are required to follow the directions listed in an MSDS for any hazardous material they use in the workplace. Consult with your supervisor, Department Safety Officer (Energy and PRM) or the City Safety Officer if you have any questions related to the requirements set forth in the MSDS.

The Risk Management Bureau must have on file all MSDSs for chemicals used in City facilities. As departments receive updated MSDSs, a copy should be forwarded to the City Safety Officer and Department Safety Officer (Energy and PRM).

5.2 CHEMICAL INVENTORY

Each area where hazardous substances are used must maintain a chemical inventory. The chemical inventory shall be updated whenever a chemical is no longer used or a new chemical is brought into the workplace.

6.0 TRAINING AND INFORMATION (8 CCR 5194 (h))

6.1 EMPLOYEE TRAINING

New employees are to be trained on the Hazardous Materials Communication Program prior to starting work. The training session must provide the new or transferred employee with the following information:

- The requirements of the Hazardous Materials Communication regulation, including the employee's rights under the regulation;
- The location and availability of the written Hazardous Materials Communication Program;

- Any operation in their work area, including nonroutine tasks, where hazardous substances are present and exposures are likely to occur;
- Methods and observation techniques used to determine the presence or release of hazardous substances in the work area;
- Protective practices the City has taken to minimize or prevent exposure to these substances;
- How to read labels and review MSDSs (See Attachment B) to obtain hazard information;
- Physical and health effects of the hazardous substances;
- Symptoms of overexposure;
- Measures employees need to put into practice to reduce or prevent exposure to these hazardous substances by engineering controls, work practices, and use of personal protective equipment;
- Emergency and first-aid procedures to follow if employees are exposed to hazardous substances; and
- The location and interpretation, if needed, of warning signs and placards to communicate that a chemical known to cause cancer or reproductive toxicity is used in the workplace.

Employees shall receive additional training when a new hazardous substance is introduced into the workplace, the employee is transferred into a new department with different types of hazardous substances, or whenever employees might be exposed to chemical hazards at another employer's work site.

6.2 HAZARDOUS NONROUTINE TASKS

Periodically, employees are required to perform hazardous nonroutine tasks. Prior to starting work on such projects, affected employees will be given information by their supervisor on hazards to which they may be exposed during such an activity. Employees must ensure that their supervisor is apprised when nonroutine tasks are to be performed. This training shall be documented using the Injury and Illness Prevention Program form *Specific Hazard Safety Orientation*.

This information will cover:

- Specific hazards;
- Measures the City has taken to reduce the risk of these hazards, such as providing ventilation, ensuring the presence of another employee, providing a respiratory protection program, and establishing emergency procedures; and
- Required protective/safety measures.

6.3 CONTRACTORS/MULTI-EMPLOYER WORK SITE

6.3.1 Verify Contract Language

Before distribution to prospective bidders, the specifications must contain language requiring the contractor to carry out the requirements of this Program.

6.3.2 Present Hazard Information to Bidders

Prospective bidders must be provided with written information about the hazardous substances known to be present at the work area.

6.3.3 Provide Information to Successful Bidder

Before the start of work, the successful bidder must be reminded of the City's known hazardous substances present and informed of the facility's Site Emergency Response Procedures applicable to the facility or work area where work will be performed.

6.3.4 Contractor Provides Documentation

Before the start of work, the contractor must provide the City with their written Hazard Communication Program. The contractor must also provide the MSDS no less than five (5) days prior to bringing a hazardous substance on site. The Hazard Communication Program and MSDS shall be sent to the City Safety Officer for review.

6.4 RESPONSIBILITIES

To ensure that outside contractors work safely in our City and to protect our employees from chemicals used by outside contractors, the Risk Management Bureau is responsible for giving and receiving the following information from contractors:

- Hazardous substances to which they may be exposed while working at a City facility as well as substances they will be bringing into the workplace; and
- Precautions and protective measures the employees may take to minimize the possibility of exposure.

It is the responsibility of the manager procuring a contractor's services to give appropriate notification to Risk Management of when the contractor will be working on site, any chemicals that will be brought onto City property, who the main contact is for the contractor, and the area the contractor will be working in during the project. It is also the procuring manager's responsibility to ensure that the contractor understands the labeling system used by the City for hazardous substances and where MSDSs can be obtained for those hazardous substances.

7.0 LAW ENFORCEMENT OFFICERS HANDLING CONTROLLED SUBSTANCES (22 CCR 66261.4(g))

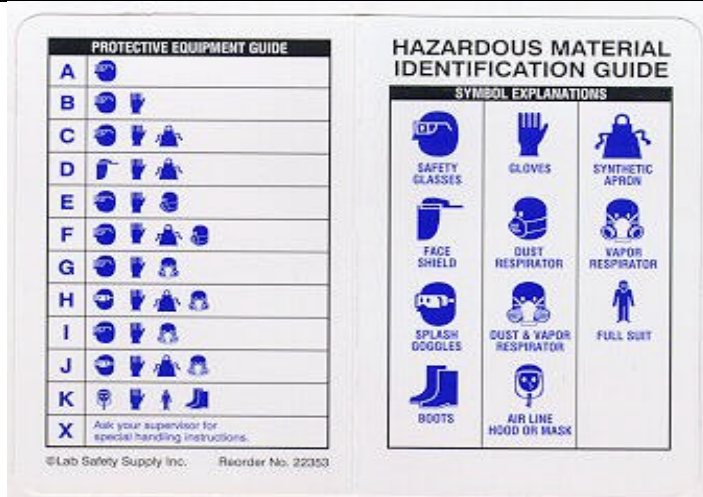
7.1 LAW ENFORCEMENT TRAINING

This regulation was adopted to protect all types of law enforcement officers during the handling of controlled substances (drugs) and references Title 8 Section 5194. All law enforcement officers handling controlled substances must receive health and safety training equivalent to the training requirements listed in Section 6.1. All law enforcement personnel must be trained prior to handling controlled substances.

ATTACHMENT A
Hazardous Materials Information Guide (HMIG)



HAZARD RATING INDEX	
Health Hazard 4 - Extreme: Highly Toxic - May be fatal on short term exposure. Special protective equipment required. 3 - Serious: Toxic - Avoid inhalation or skin contact. 2 - Moderate: Moderately Toxic - May be harmful if inhaled or absorbed. 1 - Slight: Slightly Toxic - May cause slight irritation. 0 - Minimal: All chemicals have some degree of toxicity.	3 - Serious: Flammable - Flash Point 73°F to 100°F. 2 - Moderate: Combustible - Requires moderate heating to ignite. Flash Point 100°F to 200°F. 1 - Slight: Slightly Combustible - Requires strong heating to ignite. 0 - Minimal: Will not burn under normal conditions.
Flammability Hazard 4 - Extreme: Extremely flammable gas or liquid. Flash Point below 73°F.	Reactivity Hazard 4 - Extreme: Explosive at room temperature. 3 - Serious: May explode if shocked, heated under confinement or mixed with water. 2 - Moderate: Unstable, may react with water. 1 - Slight: May react if heated or mixed with water. 0 - Minimal: Normally stable, does not react with water. © 1993 Lab Safety Supply Inc.



ATTACHMENT B - HOW TO READ A MSDS

The Material Safety Data Sheet (MSDS) is the primary document in hazard communication. OSHA standards require manufacturers and importers to provide an MSDS with each of the chemicals they ship. OSHA standards also require employers to have an MSDS for each hazardous chemical they use.

The importance of the MSDS can't be overstated. This form contains all known hazard and protection information on a hazardous chemical. The MSDS is a guide to safety.

OSHA has developed a sample MSDS form that many companies are using. Although the agency does not insist that everyone use OSHA's form, OSHA does expect all MSDSs to include the same basic information.

An MSDS should include information on the topics outlined below.

Section 1: Product Information

Product Identifier:

This section tells you the name of the chemical as it appears on the container label. This is often the chemical name of a product but can also be the trade name, common name, code name or code number.

The only time identity information is not provided is when the chemical name is a trade secret. Even in that situation, the MSDS must provide full hazard protection data.

Product Use:

The product use(s) intended by the manufacturer or supplier.

Manufactures, name, address and Emergency phone number:

The emergency phone number of the Manufacturer must be listed if one is available.

Suppliers Name Address and Emergency Phone Number:

The seller or distributor (which may be the same as the Manufacturer)

Section 2: Hazardous Ingredients

Hazardous Ingredients:

Each Hazardous Ingredient must be listed by its specific chemical name (not by its generic name).

This section also lists the exposure limits set by OSHA and other organizations.

Both OSHA's Permissible Exposure Limit (PEL) and the Threshold Limit Value (TLV) set by the American Conference of Governmental Industrial Hygienists (ACGIH) are listed. These limits specify the maximum amount of exposure to the substance a worker can have based on an eight-hour workday. The OSHA limit is a legal one; ACGIH's limit is the stricter one and is only a recommendation. Both limits are usually given in parts per million (ppm) or milligrams per cubic meter (mg/m³).

Section II may also give a ceiling, or top exposure limit, which is the maximum allowable exposure at one time. Short-Term (15-minute) Exposure Limits (STEL) may be provided. There may also be information on whether the substance is "Immediately Dangerous to Life and Health" (IDLH). If the chemical is IDLH, the respiratory protection supplied by the employer must take this rate into consideration.

Percentages:

The percentage or range of percentages for each hazardous ingredient.

CAS Registry Number:

The unique number assigned to each hazardous ingredient by the Chemical Abstract Service Registry.

Current LD (lethal dose) for each hazardous ingredient:

Is a measure of the short-term poisoning potential of a hazardous ingredient. LD is the lethal single dose at which 50% of a specified test population dies. Note: LD can be determined for many routes of entry, but oral (given by mouth) and dermal (applied to skin) LDs are used for classifications.

Current LC (lethal concentration) for each hazardous ingredient

Is a measure of the short-term poisoning potential of a hazardous ingredient. LC is the lethal concentration (by inhalation) at which 50% of a specified test population dies. Note: 4 hour exposures are normally used.

Section 3: Physical Data**Physical state**

This section lists the chemical's normal physical state (gas, liquid, solid, paste, powder, or gel) at room temperature and helps define how the chemical will behave when it is released. For example, a chemical that is normally a liquid may evaporate quickly in a hot environment, thus increasing its risk as a fire hazard.

A chemical's physical characteristics could also affect its health hazards and the protection that an employee needs. A liquid may be dangerous if it splashes on skin, thus requiring that the employee wear protective clothing. But if the same chemical changes to a vapor, the chief risk may result from inhalation, requiring respiratory protection.

Appearance:

What the chemical looks like. Appearance describes color and texture for most products and includes particle size for solids.

Odor:

What the chemical smells like. Odor describes the quality of the odor of the product (for example, fruity, sharp, almond like).

Odor threshold:

The lowest airborne concentration that can be detected by the human sense of smell.

Specific gravity:

The ratio of the weight of a substance compared to water. Less than 1, the product floats and more than 1, the product sinks in water.

Vapor density:

The vapor density is the density of the chemical's vapor compared to air, which has the density of 1. If a chemical's vapor density is higher than 1, the vapor is heavier than air and will go to the floor. If the chemical's vapor density is lower than 1, the vapor will rise in the air.

Vapor pressure:

Vapor pressure measures how volatile a liquid is. Vapor pressure also measures how easily a liquid evaporates. The higher the number, the faster the liquid evaporates.

This section of the MSDS also has a space that explains how much of the chemical will dissolve in water. The ability to dissolve is usually stated as a percentage or in parts per million (ppm).

Evaporation rate:

The ratio of how fast a substance evaporates relative to a known reference standard (usually n-butyl acetate=1).

Boiling point:

Is the temperature at which a liquid changes to a gas (at normal room pressure).

Freezing point (melting point):

The temperature at which a liquid becomes a solid or a solid to a liquid (at normal room temperature).

pH:

A value that indicates the acidity or alkalinity of a product (usually liquid). pH values below 7 are considered acidic and pH values above 7 are considered alkaline (7 is neutral).

Coefficient of water/oil distribution:

Is a number that indicates how easily a product may be absorbed into the body. A value greater than 1 means a substance may enter the body through the mucous membranes of the eyes, nose, and lungs. A value less than 1 means that the fatty tissue below the skin may absorb the substance.

Section 4: Fire and Explosion Hazard

Flammability:

This section states if the chemical has a potential to catch fire or explode and is classified as flammable or combustible.

Flash point:

Flash point is the lowest temperature at which a chemical's vapors are concentrated enough to ignite or explode. The lower the flash point, the more dangerous the material.

The flash point is determined either by using a "cc" (closed cup) or "oc" (open cup) testing method.

Example: Gasoline's flash point is -45°F. Diesel fuel #2 has a flash point of +125°F.

Means of extinction (fire-fighting procedures):

What type of fire extinguishers or the extinguishing material suitable for use on the burning product or fire.

Upper flammable limit:

The highest concentration of a gas or vapor in air (expressed as a percentage) at which the product will catch fire or explode if near an ignition source such as a spark or open flame.

Lower flammable limit:

The lowest concentration of a gas or vapor in air (expressed as a percentage) at which the product will catch fire or explode if near an ignition source such as a spark or open flame. These are also referred to as explosive limits. These concentrations, and all concentrations in between, form the flammable range.

Auto ignition temperature:

Auto ignition is the temperature above which the substance (usually the vapor) may self-ignite without an external flame or spark. Auto ignition temperatures are available only for flammable liquids and gases.

Hazardous combustion products:

The hazardous products produced when the substance burns or is exposed to extreme heat.

Sensitivity to mechanical impact:

Whether the product may explode due to physical impact (for example, being dropped, bumped, or knocked over).

Sensitivity to static discharge:

Whether the product may explode or catch fire if there is a nearby spark from static electricity.

Section 5: Reactivity Data

Some substances are unstable. They can react with other substances or in specific kinds of conditions. This section lists the chemicals or conditions to avoid. Any hazardous byproducts the chemical could generate are also listed, along with the hazards (such as toxic gases) that could be created if the chemical decomposes.

Chemical stability:

Whether the product is chemically stable when exposed to normal intended use or when placed in extended storage.

Incompatible substances:

What chemicals or chemical groups (for example, acids and caustics –Bleach and Ammonia) that will cause violent reactions when the two products contact each other.

Conditions of reactivity:

When hazardous reactions (for example, vigorous polymerization) may occur.

Hazardous decomposition products:

Hazardous substances produced or released due to aging or reaction with air or moisture. These do not include thermal decomposition products from burning or excess heating.

Section 6: Health Hazard Data

This section describes how the chemical gets into the human body and what effects it has on the body. The following are the usual methods of exposure:

Routes of entry:

How the product enters the body during normal use:

- inhalation or breathing;
- ingestion or swallowing;
- direct skin contact or absorption; and
- eye contact.

This section also lists the health hazards the chemical poses.

This section of the MSDS also lists the symptoms of exposure.

Acute exposure:

Acute effects show up immediately after exposure. This is from short-term exposure to the substance, either as a single exposure or as multiple exposures occurring within a short time, usually 24 hours or less.

Chronic exposure

Chronic effects that develop over time (usually serious) resulting from repeated exposure over a relatively long period of time, anywhere from several days to years.

Exposure limits:

The exposure limits for the product, usually the 8-hour time weighted average (TWA), and the name of the regulatory agency. The legal exposure limits (for example, in B.C. the exposure limits listed in the Occupational Health and Safety Regulation) may be different from the ones listed on the MSDS.

Irritancy of product:

Whether the product may irritate the skin, eyes, nose, throat, or any other part of the body that it contacts to produce tearing, reddening, swelling, itching, and/or pain. Irritancy is often described as mild, moderate, or severe.

Sensitization:

Whether the product may cause sensitization. A sensitizer may cause severe allergic reactions with repeated exposure.

Carcinogenic:

This section notes whether the American Conference of Governmental Industrial Hygienists (ACGIH) bases the conclusion that the chemical causes cancer on findings of the International Agency for Research on Cancer (IARC), National Toxicology Program (NTP). The section also states whether OSHA regulates the chemical for its cancer hazard.

Reproductive toxicity:

Whether the product may cause reproductive problems.

Teratogenicity:

Whether the product may cause birth defects in the fetus at exposures that do not cause damage or injury to the mother.

Mutagenicity:

Whether the product may cause changes to the genetic material (DNA) of living cells.

Synergistic products:

Other products that, when combined with exposure to the controlled product, may cause a toxic effect greater than the sum of the effects of the individual materials.

For example, product A increases the chance for getting cancer by 2 times and product B increases the chance for cancer by 2 times, but when product A and B are used together, the chance for cancer is increased by 50 times.

Section 7: Preventive Measures

This section provides the following types of information:

How to handle the chemical under normal conditions and equipment required to handle the product safely.

Safe procedures to clean up spills, leaks, and other accidental releases of the product.

- what to use to clean up a spill
- whether to evacuate immediately if there is a spill
- waste disposal information such as proper waste container design, safe procedures for handling waste, and agencies to contact regarding disposal requirements.

Personal protective equipment:

Specific personal protective equipment, and specific type of equipment, required in preventing exposure to the product.

This section describes the type of ventilation needed, such as:

- local exhaust
- mechanical exhaust
- other

It also describes respiratory protection needed (if any).

This section contains OSHA's recommended protective devices and clothing.

SPECIAL PRECAUTIONS are also listed in this section.

Specific engineering controls:

Recommended engineering controls, such as ventilation and process equipment design, to be used with the product.

Storage requirements:

Specific safe storage information such as:

- Separation from other incompatibles,
- Shelf life,
- Testing for peroxide formation,
- Sensitivity to light, temperature, or moisture.

Special shipping information

Safe shipping information such as:

- Product identification number (PIN) or United Nations number (UN number)
- Classification, as determined by the Transportation of Dangerous Goods (TDG) legislation
- Proper shipping name
- Packing group, as determined by TDG legislation

Section 8: First Aid Measures**Specific first aid measures:**

Specific first aid measures in the event of:

- Inhalation
- Ingestion
- Skin contact
- Eye contact

Examples:

- Ingestion, DO NOT INDUCE VOMITING.
- Inhalation, remove to fresh air and start CPR if breathing has stopped.
- Skin contact, flush with water for 15 minutes.
- Eye contact, flush with water for at least 15 minutes.

Section 9: Preparation Information**Date of original preparation and date of last review:**

Gives the date that the MSDS was first prepared and when it was last reviewed (which should be within 3 years of the current date). Manufacturers or importers providing only the date that the MSDS was printed are not acceptable.

Name and phone number of preparer.

Gives the name and phone number of the person or group who prepared the MSDS.